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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :

SATORU FURUTA :

SERIAL NO. : 09/599,367 :

FILED: JUNE 21, 2000 : GROUP ART UNIT: 2745

FOR: NOISE SUPPRESSION APPARATUS :

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to a first examination on the merits, please amend the above-identified application as follows:

IN THE SPECIFICATION

Please amend the specification as indicated below.[1]

A'

$$r_\alpha = \begin{cases} \alpha_{MAX} & ;snr_{all} >= SNR_h \\ \{(\alpha_{MAX} - \alpha_{MIN})snr_{all} + (SNR_h\alpha_{MIN} + SNR_l\alpha_{MAX})\}/(SNR_h - SNR_l) & \\ & ;SNR_h > snr_{all} >= SNR_l \\ \alpha_{MIN} & ;SNR_l > snr_{all} \end{cases} \quad (5)$$

MLB 9/25/06 Page 15, please amend the equation at line ~~19~~ 21 as follows:

[1]A marked-up copy of the amendments is attached hereto.

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MLB 9/25/06 Page 16, please amend the equation at line ~~10~~ 12 as follows:

A2

$$L_\beta(dB) = \begin{cases} Pn & dPs < 0 \\ Pn - dP & dPs > 0 \quad and \quad Pn - dPs > 0 \\ 0 & Pn - dPs < 0 \end{cases} \quad \cdots (7)$$

MLB 9/25/06 Page 16, paragraph at lines ~~11~~ 13 to ~~20~~ 23, please amend as follows:

A3

The correction gain calculation unit 6 calculates the noise amplitude spectrum correction gain α [f] and the noise removal spectrum correction gain β [f], on the basis of the input amplitude spectrum S [f] , noise amplitude spectrum N [f] , noise amplitude spectrum correction gain limiting value L_α, and the noise removal spectrum correction gain limiting value L_β. Using α [f], the noise amplitude spectrum N [f] can be corrected for each frequency component. And using the noise removal spectrum correction gain β [f] , the after-mentioned first noise removal spectrum S_S [t] is corrected for each frequency component.

MLB 9/25/06 Page 18, paragraph at lines ~~2~~ 5 to ~~9~~ 12, please amend as follows:

The value of the phone reception weighting value W_α [f] is predetermined according to its parameter, frequency f. And the value of W_α [f] decreases as the frequency increases. As a result of this weighting, the value of α [f] decreases in the high frequency region. Consequently an excessive suppression in the high frequency region can be avoided so that a generation of a strange sound in the frequency region can be avoided. Fig. 11 shows a profile of the W_α [f].

MLB 9/25/06 Page 18, paragraph beginning at line ~~18~~ 21, to page 19, line 6, please amend as follows:

A4

According to equation (10), when the value snr_{sp} [f] increases, namely when the SNR increases, the value of $gain_\beta$ increases, therefore , the noise removal spectrum correction gain

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A4 cont'd

β [f] increases, correspondingly. Consequently, when a spectrum component has a large SNR, the amplitude of the noise removal spectrum, the output of the after-mentioned spectrum suppression unit 8, increases. On the other hand, when a spectrum spectrum component has a large SNR, the amplitude of the noise removal spectrum, the output of the after-mentioned spectrum suppression unit 8, increases. On the other hand, when a spectrum component has a small SNR, the amplitude of the output is small. Fig. 10 shows a profile of β [f] with respect to the value of snr_{snp} [f].

MLB 9/25/06 Page 20, please amend the equation at line ~~4~~ 7 as follows:

A5

$$\_s[f] = \begin{cases} S[f] - \alpha[f] \bullet N[f] & if \quad S[f] - \alpha[f] \bullet N[f] > 0 \\ 0 \quad or \quad n[f] & else \end{cases} \quad \cdots (11$$

<u>IN THE CLAIMS</u>

Please add new Claims 10 and 11 as follows:

A6

10. A noise suppression apparatus, comprising:

a unit for determining noise amplitude spectrum of an input signal from noise-likeness of the input signal, the input signal including a noise component;

a unit for calculating a noise amplitude spectrum gain based on an input amplitude spectrum of the input signal and the noise amplitude spectrum, correcting the noise amplitude spectrum gain with a predetermined first coefficient to obtain a noise amplitude spectrum correction gain, and calculating a noise removed spectrum gain based on the input amplitude spectrum of the input signal and the noise amplitude spectrum;

a unit for performing, with respect to the input amplitude spectrum of the input signal, spectrum subtraction based on the noise amplitude spectrum correction gain and